

TERMINATORS

Every correctly wired channel or channel section can be viewed as a continuous length of data cable with nodes distributed along its length. **The two ends of every channel must each have a terminator connected to it.** Routers have an in built terminator fitted to each data port that can be switched on or off as appropriate. It is often the case that a channel starts or finishes at a router or repeater. In this case the in built terminator for that port should be switched on. When a channel starts or finishes at any other type of node, then an external terminator should be connected at this point. Refer to Figure 5 for an illustration of this. If more than two terminators are connected to a channel then the signals will be excessively attenuated which may result in loss of data.

POWER CONNECTION

Each unit is supplied with a 240VAC 3 pin input, 9VDC output plug pack power supply. The negative output terminal is connected to the mains earth pin. The DC power plug should be connected to the power socket marked as loop in. When a number of routers are installed in the one spot they can be supplied from the one power supply. Up to 5 routers can be supplied in this way. Use the power jumper lead supplied with each router to connect loop out to loop in for successive routers.

CATALOGUE NUMBERS

Part Number	Description
02-NRAS001	Nexus router assembly, (78Kbps) twisted pair network to (78Kbps) twister pair network
32-20937	Power supply for Nexus router 9VDC 1Amp
32-20938	Jumper lead 300mm length to connect extra router (up tp 5 routers can be connected with one power supply)
16-10187	Plug 3 way with stain reliet
26-NRMD003	Mounting plate (metal) for mounting 5 routers
02-06070P	Terminator

If you have any difficulty or questions contact Thomas & Betts Service in Australia on 1300 666 595, Monday to Friday, 8.30am to 4.30pm (AEST) and ask for help. Our trained service personnel will usually be able to take your call immediately and assist you in resolving your difficulty. Thomas & Betts is committed to providing valuable Through-Life Support for its products.

Thomas & Betts

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Nexus Router / Repeater
Installation Manual

GREETINGS

This document is designed to assist you during the installation of the product. The Nexus Router/Repeater is designed to be installed quickly and easily however, **Thomas & Betts recommends that you read this document thoroughly before commencing installation. Correct installation of this device is essential for the operation of the Nexus System.**

This device has been manufactured to provide trouble free operation for many years when treated with due care. There are no user serviceable parts inside. Please return to Thomas & Betts for service.

DEFINITIONS

Channel

A section of level 4 (or better) 22 AWG shielded twisted pair data communication cable used as the physical transport medium for packets of data. Limited to no longer than 1 km, terminated at both ends with terminators and with a maximum of 60 nodes connected to it. More than that will overload the channel and degrade signal performance. Thomas & Betts recommends only 50 SPU's per channel to allow for future expansion to the installation. Note that when a router or repeater is connected to a channel – that counts as 1 node.

Trunk

A channel that forms the backbone of the data cable network.

Router

A router connects a branch channel to the main trunk and selectively transfers data between them.

Repeater

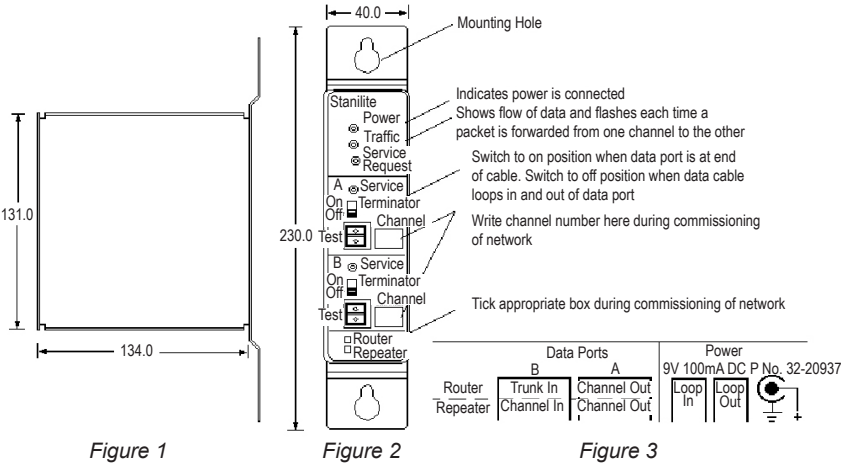
A repeater connects two sections of a channel together. It transfers data from one section of the channel to the other and boosts the signal strength in the process. A repeater is used to extend the length of a channel beyond the normal limit of the particular cable used. A repeater is physically identical to a router – the only difference is the configuration settings, which is set by an external computer running the Nexus software. Nexus Router/Repeaters are pre-configured in the factory and shipped as repeaters.

Terminator

A terminator is a device that is placed at both ends of a channel to prevent signal reflections. Signal reflections distort the signal waveform and can cause loss of communications in an unpredictable manner.

UNIT DESCRIPTION

On the underside of the unit there are two data ports and two power sockets (see Figure 3). On the front of the unit there are two terminator switches, two data test sockets, four LED's and a push button (see Figure 2). The unit is supplied with a plug pack power supply, two data cable connector plugs, a DC power jumper lead and 2 external data cable terminators. The label on the front of the unit is made of a material that can be written on. During commissioning of the network, record the channel numbers on this label for later reference.



DATA CABLE CONNECTION

Years of experience have shown that any problems encountered with the operation of a Nexus system are virtually always caused by incorrect wiring of the data cable network, resulting in poor communications.

- The most common causes of problems include:
- Wrong data cable type.
 - Wrong wiring topology (eg: a “T” or star connection made at a node).
 - Incorrect use of terminators.
 - Incorrect connection of cable shields.
 - Intermittent joins due to loose connections.
 - Intermittent joins due to over tightened damaged connections.
 - Data cable proximity to electromagnetic noise sources.

The basic wiring rule for connecting routers and nodes to the twisted pair data cable is that they are all wired in parallel across the pair. The connection is polarity insensitive. The data connection to the router is made using a 3-way connector plug for each data port. The centre pin in each corresponding socket is earth. The outer 2 pins are data. Figure 4 shows the four different types of connection that can be made with this connector plug.

Data Cable Connector Configurations				
Terminator:	Off	Off	On	On
Shield:	Looped	Twisted, Earthed	Earthed	
Data Cable:	Twisted	Looped	End	End

Figure 4: Cable Connection and Terminator On/Off Setting

The function of the cable shield is to reduce pick up of electrostatic noise. If the shield is not correctly connected it can pick up more noise than if the shield was not there at all. The shield must be electrically continuous throughout the length of the channel and be connected to earth at one point only, ie: at a router or repeater. Connection at more than one point will create a ground loop in the shield, which can pick up noise.

NETWORK TOPOLOGY

Figure 5 is an example showing how the NUN, computer, routers, repeaters and SPU nodes are connected together to form a Nexus network. The topology used is a doubly terminated multi-drop bus structure. The trunk is designated channel number 1. The PC, NUN and all routers are connected to the trunk. By convention, data port B of each router is used to connect to the trunk. Data port A is used for the branch channel for each router.

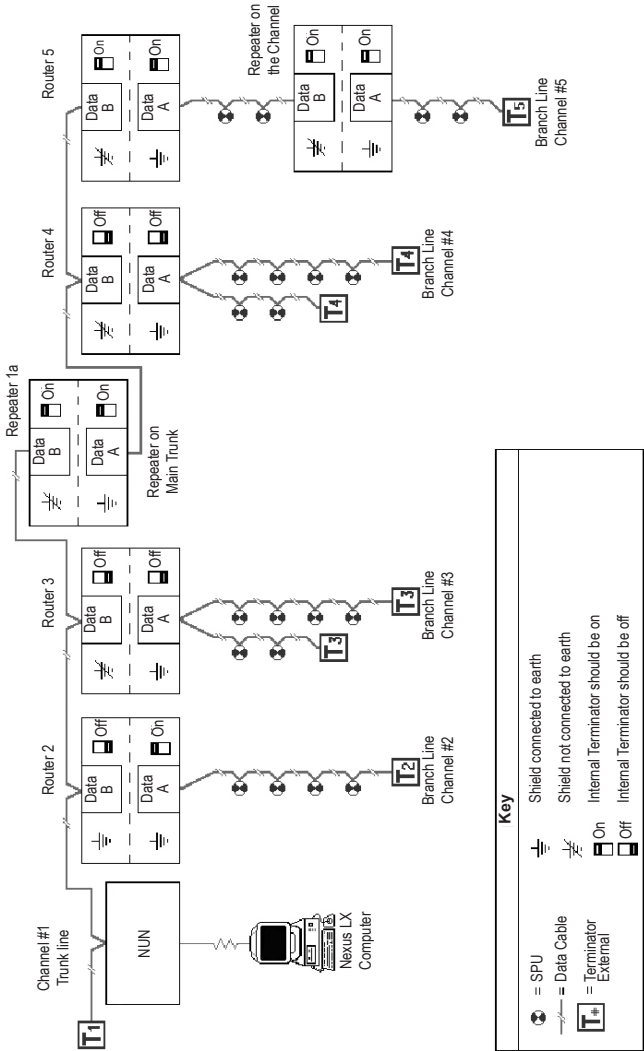


Figure 5: Sample Diagram of Nexus Multi-drop Topology Network